



## OPERATOR MANUAL

# ***VISCOUS FLUID SYSTEM*** ***TR8100-11***

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## **INTRODUCTION**

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The Viscous Fluid System is a surgical tool for use on the human eye. It is designed and manufactured to be reliable, safe and easy to operate.

This manual is your written guide to the Viscous Fluid System. Read the entire manual carefully before operating the instrument. Recommended settings are given only as guidelines, the surgeons discretion should prevail. The surgeon and support personnel should thoroughly familiarize themselves with the systems operation and limitations.

The warnings and notes contained in this manual are important and must be followed. They are set apart throughout this manual.

If you have questions or require additional information, please contact the Technical Service Department at:



**822 Swan Drive  
Mukwonago, Wisconsin 53149**

**(800) 433-8197  
(414) 363-5440  
FAX (414) 363-3937**

If you are located outside the United States,  
please contact your local authorized  
Escalon distributor.



## FRONT PANEL *(see Figure 1)*

The following list is a brief description of the front panel controls.

**POWER** ----- Red button to switch power on and off.

### **PRESSURE:**

**PRESET WINDOW** ----- Provides the two-digit display of preset pressure, which is shown in pounds per square inch (psi).  
Bar graph display indicating % of output based on preset level setting.

**PRESET** ----- The adjustment knob which regulates preset pressure from 0 to 70 psi, as viewed in the pressure preset display window.

### **VACUUM:**

**PRESET WINDOW** ----- Provides the three-digit display of preset vacuum, which is shown in millimeters of mercury (mm Hg).  
Bar graph display indicating % of vacuum based on preset level setting.

**PRESET** ----- The adjustment knob which regulates preset vacuum from 0 to 600mm Hg, as viewed in the vacuum preset display window.

**SELECTOR SWITCH** --- Selects desired function. Pressure / Vacuum.

**CPC CONNECTOR** ----- Connector used to attach the VFS disposable pack to the system.

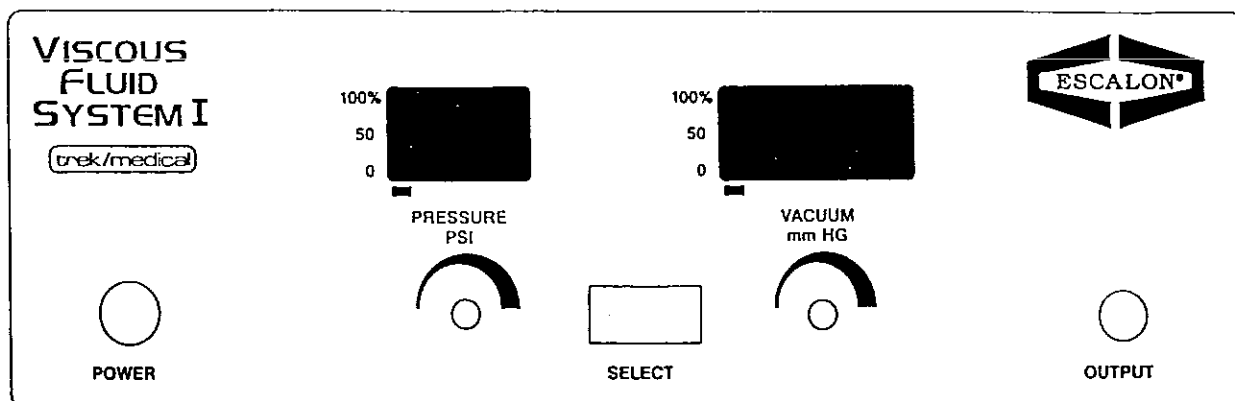


Figure 1

## REAR PANEL *(see Figure 2)*

The following is a brief description of the back panel components:

**FAN** ----- Cools internal components.

**POWER CORD** ----- Supplied with system. Use only "*Medical Grade*" power cord.

**FUSE RECEPTACLE**----- Always replace with same type fuse described in specifications.

**FOOT PEDAL** ----- Pressure and Vacuum linear control.

**POWER RECEPTACLE**- Accepts 85VAC to 260VAC, 50/60 Hz (no need to select voltage input).

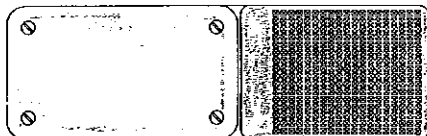
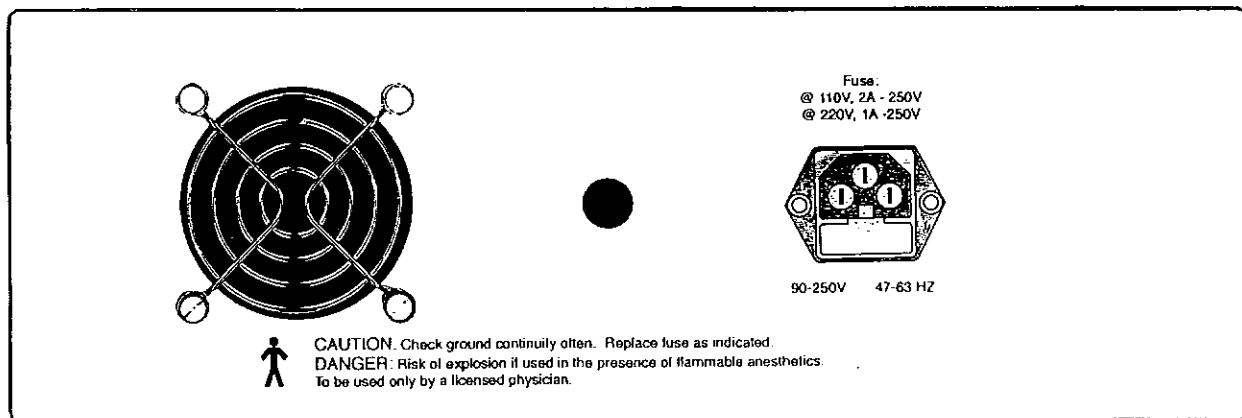


Figure 2

## DISPOSABLE *(see Figure 3)*

The VFS-100 disposable pack (catalog number TR8170-11) is to be used with the Viscous Fluid System. See the disposable pack Directions For Use for further information. It contains the following items:

1. CPC Adaptor
2. Tubing
3. Syringe connector
4. Syringe
5. Cannula
6. Syringe barrel piston
7. Syringe luer cap

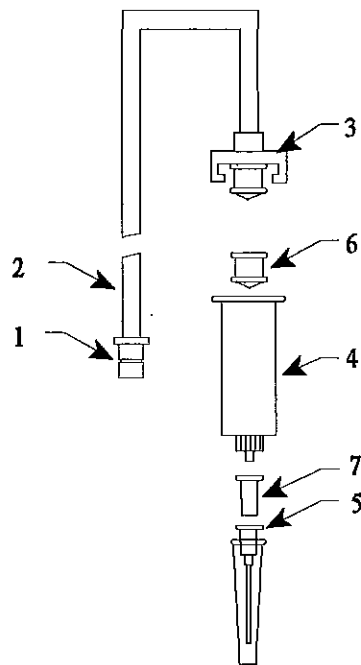


Figure 3



## OPERATIONAL DESCRIPTION

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The Viscous Fluid System is a tool intended for use in surgical procedures performed by appropriately qualified ophthalmologists. This machine is designed to inject or aspirate liquids of various viscosity into and from the eye, particularly silicon oil.

The system requires the use of a disposable “syringe” handpiece (obtained from Escalon, catalog number TR8170-11) which houses the viscous fluid. The combined system, machine and disposable handpiece, dispenses or aspirates the viscous fluid by depressing the linear controlled foot pedal on the system. Surgical procedures requiring either pressure or vacuum require the use of the same disposable syringe kit.

If additional information is required, please contact the Customer Service department or your local Escalon representative.

### ***Pressure:*** (see to Figure 1)

Pressure is selected by setting the front panel “SELECT” switch to pressure. Maximum “preset” pressure is regulated by rotating the front panel “PRESSURE” control knob to the desired level displayed in the pressure display window. The surgeon can then linearly control fluid injection by slowly depressing the foot pedal. As greater force is applied to the foot pedal, a corresponding higher output pressure is applied to the disposable syringe and viscous fluid up to the *preset* pressure setting. A linear percentage representation of the total *preset* level output is displayed, by percentage, on the bar graph next to the pressure *preset* number in the front panel display window.

### **Set-Up and Checkout**

1. Plug supplied power cord, or an equivalent “Hospital Grade” power cord, into the appropriate electrical outlet.
2. Press the lower left power button to on. The power button should illuminate.
3. Set the “SELECTOR” switch to pressure. The front panel pressure LED should illuminate and the pressure bar graph should be off (no display).
4. Set the preset pressure control knob to a low setting (<10 psi).
5. Momentarily press the system foot pedal. Ensure the pressure bar graph progressively illuminates as force is applied to the foot pedal.
6. Perform the VFS-100 disposable Directions For Use (DFU) for pressure.
7. Adjust the output pressure to the desired output level prescribed by the Surgeon.
8. If all steps operated properly, system is now ready for use.

**Warning:** If at any time the system does not perform as indicated, immediately discontinue use and contact Escalon’s Service Department for assistance.

***Vacuum:*** (see to Figure 1)

Vacuum is selected by setting the front panel "SELECT" switch to vacuum. Maximum "preset" vacuum is regulated by rotating the front panel "VACUUM" control knob to the desired level displayed in the vacuum display window. The surgeon can then linearly control fluid injection by slowly depressing the foot pedal. As greater force is applied to the foot pedal, a corresponding higher output vacuum is applied to the disposable syringe and viscous fluid up to the *preset* vacuum setting. A linear percentage representation of the total *preset* level output is displayed, by percentage, on the bar graph next to the vacuum *preset* number in the front panel display window.

**Set-Up and Checkout**

1. Plug supplied power cord, or an equivalent "Hospital Grade" power cord, into the appropriate electrical outlet.
2. Press the lower left power button to on. The power button should illuminate.
3. Set the "SELECTOR" switch to vacuum. The front panel vacuum LED should illuminate and the vacuum bar graph should be off (no display).
4. Set the preset vacuum control knob to a low setting (<100 mm Hg).
5. Momentarily press the system foot pedal. Ensure the vacuum bar graph progressively illuminates as force is applied to the foot pedal.
6. Perform the VFS-100 disposable Directions For Use (DFU) for vacuum.
7. Adjust the output vacuum to the desired output level prescribed by the Surgeon.
8. If all steps operated properly, system is now ready for use.

**Warning:** If at any time the system does not perform as indicated, immediately discontinue use and contact Escalon's Service Department for assistance.

***Fuse Replacement:*** (see Figure 2)

1. Remove the power cord from the rear of the unit.
2. Remove the fuse holder from the power receptacle with a small flat blade screw driver.
3. Dislodge both (2) fuses and replace with same type as described in specifications section of this manual.

***Disposable:*** (see Figure 3)

Use only the VFS-100 disposable pack (catalog number TR8170-11) with the Escalon Viscous Fluid System. Follow the instructions provided by the Directions For Use accompanying the pack. Note that the disposable is intended for one procedure only (single use). Ensure that the tubing is not occluded during any phase of operation.



## **SPECIFICATIONS**

*(Contains one Viscous Fluid System with foot pedal and power cord)*

<b>PRESSURE:</b>	MIN - MAX settings Percentage display	0 - 70 PSI $\pm$ 2 PSI within 8 PSI
<b>VACUUM:</b>	MIN - MAX settings Percentage display	0 - 600mm Hg $\pm$ 5 mm Hg within 20 mm Hg
<b>DIMENSIONS:</b>	Height: Weight: Depth:	4.0 inches (10.2mm) 12.0 inches (30.5mm) 11.25 inches (28.6mm)
<b>WEIGHT:</b>	Unpacked:	Approx. 13 pounds
<b>ENVIRONMENTAL:</b>	Temperature: Relative Humidity:	40°F - 100°F 10% to 70% without condensation
<b>ELECTRICAL:</b>	The system accepts the following input commercial power voltages and frequencies and meets the leakage currents specified in IEC 60 601-1-1  85VAC to 260VAC, 50/60 Hz	
<b>FUSE:</b>	2A/250V @ 110V AC, Fast Acting, 5x20 1A/250V @ 220V AC, Fast Acting, 5x20	
<b>PROTECTION AGAINST ELECTRICAL SHOCK:</b>	Class I, Type B	
<b>WARNING:</b>	Do not use the Viscous Fluid System near flammable anesthetics.	
<b>NOTE:</b>	If at any time a power fails in any mode, the Viscous Fluid System will revert to a "safe mode". All functions will cease immediately. When power is restored, the unit will resume operation at power up level.	

*Escalon will make available upon request circuit diagrams, component parts, and other pertinent information.*





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## MAINTENANCE

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### ***IMMEDIATELY AFTER EACH SURGICAL PROCEDURE***

1. Turn off power to the Viscous Fluid System.
2. Disconnect and dispose of all disposable components.
3. If required, the console may be wiped with a clean, damp sponge or cloth using a mild soap and water solution. *Note:* Do not use solvents or abrasives.

For additional service, calibration, or application assistance, please contact Escalon's Technical Service Department.

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## LIMITED WARRANTY

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Escalon warrants for a period of one (1) year the Viscous Fluid System and all items shipped with the unit from the date of shipment to be free from defects in materials and workmanship when properly installed, maintained, used for the intended purpose, and the owner/operator used Escalon packs purchased from Escalon. This warranty applies only to the original purchaser/user of the equipment and only so long as the equipment is used in the country to which it was originally shipped by Escalon.

This warranty is null and void if the user attempts to service the equipment (other than performing the procedures described in this Operator Manual) or if service is performed by persons who are not trained and authorized to do so by Escalon. If the unit is found to be defective within the period specified above after examination by an authorized service representative, and Escalon is satisfied that the failure was due to defective materials and/or workmanship, Escalon will repair, or at its option, replace the defective parts without charge. Escalon reserves the right to make such an examination and to make the necessary repair/replacement in its own factory, at any authorized repair station, or at the purchaser/user's place of installation. Any shipping charges incurred shall be paid by the purchaser/user of the equipment. Disposable or consumable items are not covered by this warranty.

The express warranty above is the sole warranty obligation of Escalon and the remedy provided above is in lieu of any and all other remedies. There are not other agreements, guarantees, or other warranties - oral or written, express or implied — including without limitation of warranty of merchantability or fitness for a particular purpose. Escalon shall have no liability whatsoever for any incidental or consequential damages arising out of any defect, improper use, or unauthorized service or repair.

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## WARNING

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The Escalon Viscous Fluid System and VFS-100 (catalog number TR8170-11) disposable constitutes a complete surgical system. Use of disposables other than the Escalon Viscous Fluid Injector System disposables may affect system performance and create potential hazards. If use of other devices is determined to have contributed to the malfunction of the equipment under contract, voidance of the contract and/or invoicing at prevailing hourly rates may occur.